Overview of flood-related activities of WMO

Mr. Bruce Stewart, Assistant Director,
National Operations Branch, Bureau of Meteorology, Australia

The WMO Hydrology and Water Resources Programme

The Hydrology and Water Resources Programme (HWRP) fulfils one of the major purposes of WMO, namely *"to promote activities in operational hydrology and to further close cooperation between Meteorological and Hydrological Services"* (paragraph (e) of Article 2 of the Organization's Convention).

The activities under the HWRP concentrate on the measurement of basic hydrological elements from networks of hydrological and meteorological stations; the collection, processing, storage, retrieval and publication of hydrological data; the provision of such data and related information for use in planning and operating water resources projects; and the installation and operation of hydrological forecasting systems.

The HWRP also promotes improvements in the capabilities in developing countries, through technology transfer and technical cooperation, so as to enable them, on their own, to assess their water resources on a continuous basis, to respond to threats of floods and droughts and thus to meet the requirements for water and its use and management for a range of purposes. The Programme also promotes increased collaboration between NHSs and National Meteorological Services (NMSs), particularly in the provision of timely and accurate hydrological forecasts.

Basic Systems in Hydrology

The Programme on Basic Systems in Hydrology (BSH) provides the basis and framework for the majority of the scientific and technical aspects of WMO activities in hydrology and water resources. It covers the collection, transmission and storage of data, the implementation of the Hydrological Operational Multipurpose System (HOMS), and the development of the World Hydrological Cycle Observing System (WHYCOS). The reinforcement of observing networks and data management capabilities pursued by WHYCOS is a supporting initiative towards improvements in flood forecasting capabilities.

Forecasting and Applications in Hydrology

The purpose of the Programme on Forecasting and Applications in Hydrology (FAH) is to cover those aspects of the HWRP relating to hydrological modelling and forecasting and the application of hydrology in studies of global change. The programme mounts activities in support of water resources development and management, hazard mitigation, studies of climate change and environmental protection, and is linked with the World Climate and Tropical Cyclone Programmes.

Specific Aims of the WMO Flood-Related Activities

The specific aims of the WMO flood-related activities are:

- Improved flood forecasting capabilities for NMHSs through new techniques and better assimilation of available data into hydrological models for flood forecasting purposes;

- A coordinated and cooperative effort amongst modellers (in NMSs and NHSs) to work together in the interests of developing an effective and technologically sound and robust flood forecasting methodology (incorporating QPE and QPF);
- Development of new multi-sensor methodologies for QPE for operational use that considers gauged data, satellite, ground-based radar and model-derived estimates;
- Documentation of approaches to forecasting ice formation/break-up, glacial outburst, and combined storm surge and river flooding;
- Documentation to assist NMHSs in fulfilling their roles and responsibilities in the provision of flood warning services (Flood Forecasting Manual);
- Guidance on the potential use and benefits of medium- to long-term flood and flow forecasting capabilities;
- Assistance to, and guidance in, disaster mitigation and risk management in support of the role and responsibilities of NMHSs;
- Design flood and low flow estimation manuals prepared to meet the identified requirements of NMHSs;
- (Increased effectiveness of CHy activities through appropriate cooperation and coordination of activities with other relevant groups and agencies.

WMO Flood Forecasting Initiative

The WMO Flood Forecasting Initiative was developed with the aim of helping to bridge the gap between hydrological and meteorological communities in the provision of flood-forecasting and warning services. The objective of the initiative is to improve the capacity of meteorological and hydrological services to jointly deliver timely and more accurate products and services required in flood forecasting and warning and in collaborating with disaster managers, active in flood emergency preparedness and response. The initiative has been implemented through a series of regional workshops and a global synthesis conference planned for late 2006.

International Flood Initiative

The concept of the International Flood Initiative (IFI) builds on the successful record of cooperation between UNESCO and WMO and other partner organizations to conceptualise, design and implement flood mitigation and protection actions and activities within their individual areas of expertise. The Initiative is based on the concept of integrated flood management and aims to ensure that an end-to-end process of flood management is put in place in a balanced manner, duly considering prevention and mitigation measures and the positive and negative impacts of floods. By applying the Integrated Flood Management approach that considers comprehensive risk management principles and approaches that aim at multi-hazard responses,

The Associated Programme on Flood Management (APFM)

The APFM is a joint initiative of the World Meteorological Organization (WMO) and the Global Water Partnership (GWP) to promote the concept of Integrated Flood Management (IFM). It promotes an integrated approach to flood management. APFM integrates land and water resources development in a river basin, within the context of integrated water resources management (IWRM), aiming at to maximize the net benefit from floodplains and to minimize loss of life from flooding. The governments of Japan and the Netherlands financially support the programme.